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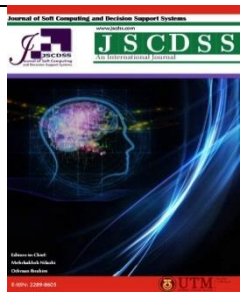

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Evaluating the Quality Factors in Hotel Websites Using Multi-Criteria Decision Making Approach: The Customers' Viewpoint

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Abstract

This study aims to provide a multi-criteria decision making approach to evaluate the hotel website through a set of important quality factors. We use Loiacono's WebQual™ scale to examine the quality of hotel websites. The data is collected from the users of the world's largest travel site, TripAdvisor. We adopt a multi-criteria decision making approach, Order of Preference by Similarity to Ideal Solution (TOPSIS), to perform data analysis on the collected data. Results revealed that trust, response time, transaction capability and informational fit-to-task are the most important factors from the customers' perspectives. These findings offer useful implications for hotel website managers to consider the identified factors in the design of websites to attract and retain the consumers for long term.

Keywords: Tourism, Multi-Criteria Decision Making, Online Booking, Assessment

1. Introduction

The assessment of websites has been the focus of attention for academics from the emergence of hotel internet websites in the late 90s (Law, 2018). During this period, consumers were able to reserve hotel rooms via conventional media (e.g., travel agents, telephone and fax). Since the mid-90s, academic researchers and industry practitioners have emphasized the significance of reserving travel relevant services via online platforms, namely hotel booking website, to improve the quality of their services and revenue (Bonn, Furr, & Susskind, 1998; Law, 2018; Walle, 1996). Consequently, hotels started to incept websites to provide worldwide customers with information via the internet. Several hotel websites have been available since the mid-90s through to the late 2000s. Hotel managers focused on website improvement instead of creating a mere website by updating the web technologies utilized to create their websites. Such improvements were to present personalized consumer services and to streamline the process of reservation (Baloglu & Pekcan, 2006). From 2010 onwards, hotel managers have dedicated to enhance their websites via the adoption of modern business models and the development of various website versions (Fong, Lam, & Law, 2017).

Websites provide businesses with streams of revenue as well as a platform for products and services promotion by acquiring more customers. However, not every website is successful in achieving such purpose. Thus, an effective website assessment is a prominent issue for researchers and practitioners (Chiou, Lin, & Perng, 2010). To summarize, website assessment is the focus of industrial practitioners and academic researchers (Law, Qi, & Buhalis, 2010).

Today, the majority of tourists plan their holidays, reserve requested services and share their experiences on the internet (Lu, Deng, & Wang, 2007). Official websites are an integral tool in numerous aspects (Díaz-Luque, 2009; Fernández-Cavia & Huertas-Roig, 2010): a) to provide information for possible of current travelers that are seeking destinations of interest, destination information, travel routes, opening hours and prices of museums, tourist attractions and trails, accommodation etc. b) destination branding, i.e. communicating the basic traits and values of a brand for particular destinations, known as brand equity in marketing and advertisement terms (Sartori, Mottironi, & Corigliano, 2012); c) a means of convincing possible tourists; d) a channel for products and services relevant to marketing; and e) a platform to share experiences and information between destination managers and travelers, or among travelers themselves. It is common knowledge that the internet may serve as an influential marketing tool in

the tourism sector (Buhalis & Law, 2008). Based on (Schmidt, Cantallops, & dos Santos, 2008), it is clear that the internet is transforming marketing strategies and hotels are making the most of the internet as an effective marketing tool. Organization websites are crucial since they represent the organization within the internet environment. Hence, organizational websites must be efficient and effective to be able to rival their competitors. For the purpose of assessing the effectiveness of such websites, it is vital to determine evaluation indices and evaluation methods (Schmidt et al., 2008). Currently, there are no general website evaluation models that entail qualitative indices from the perspective of end users for hotel websites.

Numerous website assessment studies have been carried out in the literature. Tourism website (Dickinger & Stangl, 2013), websites pertaining to hospitality (Murphy, Forrest, Wotring, & Brymer, 1996), destination related websites (Feng, Morrison, & Ismail, 2004), travel supplier websites (Kaynama & Black, 2000), websites of airlines (Shchiglik & Barnes, 2004), apparel websites (Kim & Stoel, 2004), and travelling websites (Lu et al., 2007) are some examples of website assessment researches.

Additionally, online booking platform for hotels and relevant issues are examined in the literature due to their importance in regard to online traveling. The majority of researchers have assessed the hotel website in terms of numerous aspects, namely website functions, design and traits. Prior researches imply that the quality of hotel websites substantially and positively impact the propensity of customers to reserve rooms online (Bai, Hu, & Jang, 2007; Wang, Law, Guillet, Hung, & Fong, 2015).

This study evaluate the hotel websites through the quality dimensions proposed by Loiacono (2000). The authors have suggested the following factors for website evaluations: web appearance, entertainment, informational fit-to-task, transaction capability, response time and trust. Table 1 shows these factors along with the indicators for each dimension (Kim & Stoel, 2004). These factors are ranked by the use of a multi-criteria decision machining approach, Order of Preference by Similarity to Ideal Solution (TOPSIS).

The reminder of this paper is orgnized as follow. Section 2 presents the TOPSIS technique. Section 3 provides data collection procedure and analysis. Finally, section 4 presents the conclusion and future study.

Table 1
Quality factors and the indicators

Factors	Indicators
Web Appearance	"The website displays visually pleasing design"
	"The website is visually pleasing"
	"The website is visually appealing"
	"It would be easy for me to become skillful at using the website"
	"Learning to operate the website is easy for me"
	"The display pages within the website are easy to read"
Entertainment	"I feel cheerful when I use the website"
	"I feel happy when I use the website"
	"I feel sociable when I use the website"
	"The website design is innovative"
	"The website is innovative"
	"The website is creative"
Informational Fit-To-Task	"I can interact with the website in order to get information tailored to my specific needs"
	"The website has interactive features, which help me accomplish my task"
	"The website allows me to interact with it to receive tailored information"
	"The website adequately meets my information needs"
Transaction Capability	"Most all business processes can be completed via the website"
	"All my business with the company can be completed via the website"
	"The website allows transactions online"
	"The website is an alternative to calling customer service or sales"
Response Time	"The website takes long to load"
	"The website loads quickly"
	"When I use the website there is very little waiting time between my actions and the website's response"
Trust	"I trust the website to keep my personal information safe"
	"I feel safe in my transactions with the website"

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2. TOPSIS

TOPSIS method is widely used in decision making problems (Nilashi & Ibrahim, 2014; Zare et al., 2016). The procedure of TOPSIS technique includes the following steps (Hwang & Yoon, 1981).

Step 1: In this step decision matrix is formed. It includes all responses to the decision variables. With a set of $A = \{A_i | i = 1, \dots, n\}$ as alternatives and $C = \{C_j | j = 1, \dots, m\}$ as criteria, we have:

$$\tilde{r}_{ij}(\boldsymbol{x}) = \frac{\tilde{x}_{ij}}{\sqrt{\sum_{i=1}^{n} \tilde{x}_{ij}^2}}, \quad i = 1, \cdots, n; \quad j = 1, \cdots, m \tag{1}$$

where $\tilde{x}_{ij}\ (i = 1, \dots, n; j = 1, \dots, m)$ the respondent judge on the variables. In this equation, $\tilde{r}_{ij}(\boldsymbol{x})$ are the normalized values.

Step 2: In this step, the weighted normalized decision matrix is calculated as:

$$\tilde{v}_{ij}(\boldsymbol{x}) = \tilde{w}_j \tilde{r}_{ij}(\boldsymbol{x}), \quad i = 1, \cdots, n; \quad j = 1, \cdots, m. \tag{2}$$

where $\tilde{W} = \{\tilde{w}_j \mid j = 1, \dots, m\}$ are set of weights for attributes.

Step 3: The Positive Ideal Point (PIS) and the Negative Ideal Point (NIS) are calculated as:

$$\begin{aligned} &PIS = \tilde{\boldsymbol{A}}^+ = \\ &\{\tilde{v}_1^+(\boldsymbol{x}), \tilde{v}_2^+(\boldsymbol{x}), \cdots, \tilde{v}_j^+(\boldsymbol{x}), \cdots, \tilde{v}_m^+(\boldsymbol{x})\} = \\ &\{(\max_i \tilde{v}_{ij}(\boldsymbol{x}) \mid j \in J_1), \ (\min_i \tilde{v}_{ij}(\boldsymbol{x}) \mid j \in J_2) \mid i = 1, \cdots, n\} \\ &NIS = \tilde{\boldsymbol{A}}^- = \\ &\{\tilde{v}_1^-(\boldsymbol{x}), \tilde{v}_2^-(\boldsymbol{x}), \cdots, \tilde{v}_j^-(\boldsymbol{x}), \cdots, \tilde{v}_m^-(\boldsymbol{x})\} = \\ &\{(\min_i \tilde{v}_{ij}(\boldsymbol{x}) \mid j \in J_1), \ (\max_i \tilde{v}_{ij}(\boldsymbol{x}) \mid j \in J_2) \mid i = 1, \cdots, n\} \end{aligned} \tag{3}$$

Step 4: The separation values are computed by the Euclidean distance measure from PIS and NIS as:

$$\tilde{S}_i^+ = \sqrt{\sum_{j=1}^{m} [\tilde{v}_{ij}(\boldsymbol{x}) - \tilde{v}_j^+(\boldsymbol{x})]^2}, i = 1, \cdots, n \tag{4}$$

$$\tilde{S}_i^- = \sqrt{\sum_{j=1}^{m} [\tilde{v}_{ij}(\boldsymbol{x}) - \tilde{v}_j^-(\boldsymbol{x})]^2}, i = 1, \cdots, n \tag{5}$$

Step 5: In this step, the closeness coefficient is calculated as:

$$C_i^* = D(S_i^-) \Big/ [D(S_i^+) + D(S_i^-)], \quad i = 1, \cdots, n \tag{6}$$

In this step, the alternative with the maximum is selected as the best alternatives.

3. Data collection and analysis

This study collects the data from the users of TripAdvior (http://www.tripadvisor.com/) which is widely used as a platform in tourism context for data collection (Ahani, Nilashi, Ibrahim, Sanzogni, & Weaven, 2019; Fakharinejad, Sadeghi, & Ahmadyan, 2019; Nilashi et al., 2019; Nilashi, Bagherifard, Rahmani, & Rafe, 2017; Nilashi, bin Ibrahim, Ithnin, & Sarmin, 2015; Zhang, Ji, Wang, & Chen, 2017). According to (Nilashi et al., 2018), "TripAdvisor which has been one of the important elements in travel marketing is used by travel agencies to grow and market the accommodation products and businesses of hotels". This platform is also used by the travellers for destination selection. The platform provides a recommendation agent which suggests the accommodations to the customers according to their preferences. We selected 300 users and send them the questionnaire to provide their evaluation on hotel websites. To do so, we selected 10 hotel websites in Malaysia and asked the respondent to fill the survey questionnaire.

After data collection, we performed TOPSIS on the collected data to find the relative importance of the factors presented in Table 1. The results are presented in Table 2. The results showed that trust, response time, transaction capability and informational fit-to-task are the most important factors for hotel websites evaluation from the customers' perspective.

Table 2
The rank of quality factors and the indicators

Factors	Rank	Indicators	Rank
Web	5	"The website displays visually pleasing design"	1
Appearance		"The website is visually pleasing"	3
		"The website is visually appealing"	2
		"It would be easy for me to become skillful at using the website"	4
		"Learning to operate the website is easy for me"	6
		"The display pages within the website are easy to read"	5
Entertainment	6	"I feel cheerful when I use the website"	3
		"I feel happy when I use the website"	2
		"I feel sociable when I use the website"	1
		"The website design is innovative"	4
		"The website is innovative"	5
		"The website is creative"	6

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Table 2
The rank of quality factors and the indicators (Cont.)

Factors	Rank	Indicators	Rank
Informational Fit-To-Task	4	"I can interact with the website in order to get information tailored to my specific needs"	1
		"The website has interactive features, which help me accomplish my task"	3
		"The website allows me to interact with it to receive tailored information"	2
		"The website adequately meets my information needs"	4
Transaction Capability	3	"Most all business processes can be completed via the website"	1
		"All my business with the company can be completed via the website"	2
		"The website allows transactions online"	3
		"The website is an alternative to calling customer service or sales"	4
Response Time	2	"The website takes long to load"	3
		"The website loads quickly"	2
		"When I use the website there is very little waiting time between my actions and the website's response"	1
Trust	1	"I trust the website to keep my personal information safe"	2
		"I feel safe in my transactions with the website"	1

4. Conclusion

This research applied a multi-criteria approach, Order of Preference by Similarity to Ideal Solution, to evaluate the hotels quality factors from the customers' perspective. We use Loiacono's WebQualTM scale to examine the quality of hotel websites. The respondents' evaluations of website quality in this study were found trust, response time, transaction capability and informational fit-to-task as the most important factors for hotel websites evaluation.

This research has some limitations which can be investigated in the future studies. First, this research applied crisp Order of Preference by Similarity to Ideal Solution to measure hotels website quality. Thus, the application of TOPSIS with fuzzy set theory can be interesting in evaluating the factors for hotel websites from the customers' perspective. Second, the relationship between the factors can be further examined using multi-criteria decision making approaches (e.g., Decision Making Trial and Evaluation Laboratory) (Samad, Nilashi, & Ibrahim, 2019; Yadegaridehkordi, Hourmand, et al., 2018) and statistical approaches (e.g., Partial Least Squares Structural Equation Modeling) (Nilashi, Jannach, bin Ibrahim, Esfahani, & Ahmadi, 2016; Yadegaridehkordi, Nilashi, Nasir, & Ibrahim, 2018; Yadegaridehkordi, Shuib, Nilashi, & Asadi, 2019). Third, our work was based on Loiacono's WebQualTM scale to examine the quality of hotel websites. Therefore, this study can be further developed to examine the hotel websites through other factors in the literature.

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